

APPENDIX A

RUNWAY 4-22

TECHNICAL MEMORANDUM

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Range Regional Airport Master Plan RS&H Project No. 214-0055-001

Date: 22 September 2021
Subject: Runway 4-22 Design Category (Existing and Future)
Prepared For: Federal Aviation Administration
Prepared By: RS&H, Inc. on behalf of Range Regional Airport

1 INTRODUCTION

The determination of a critical aircraft is an essential element in airport planning and design. The FAA provides guidance in Advisory Circular (AC) 150/5000-17, *Critical Aircraft and Regular Use Determination*, defining the term critical aircraft, as:

"...the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 annual operations, including both itinerant and local operations, but excluding touch-and-go operations."

Establishing an accurate number of aircraft operations by aircraft type is challenging at airports like Range Regional Airport (HIB or Airport) because there is no airport traffic control tower to perform operational counts and there is more than one runway capable of accommodating various aircraft in the fleet. As a result, airport tenant and user interviews/surveys often provide the best insight on airport activity and tenant/user operational needs.

The purpose of this technical memorandum is to establish the current and future critical aircraft for Runway 4-22 at HIB and provide any documentation that exists to help quantify the operational counts for its regular users.

2 FINDINGS

In the most recent airport layout plan update, the critical aircraft of Runway 4-22 is listed as the Beechcraft King Air, which is referenced as B-II.¹ However, since that update, the FAA introduced the B-II Small category which further subdivides the group of aircraft by their weight.

¹ The maximum takeoff weight (MTOW) of the BE9L, BE9T are all less than 12,500 pounds labeling them as B-II small aircraft.

Comparatively, the FAA design standards of B-II and B-II Small are very similar, with the only differences being the following reduced dimension standards in the B-II Small category: the approach and departure runway protection zones (RPZs), the runway obstacle free zone (ROFZ), and the separation distances between the runway centerline and holding positions, as shown in **Table 1**.

Table 1 Comparison of B-II Small & B-II Design Standards

Item	B-II Small Standards	B-II Standards
Approach/Departure Runway Protection Zone (RPZ)		
Length	1,000'	1,000'
Inner Width	250'	500'
Outer Width	450'	700'
Acres	8.035	13.77
Runway Obstacle Free Zone (ROFZ)		
Length	200'	200'
Width	250'	400'
Runway centerline to:		
Holding position	125'	200'

Source: FAA AC 150/5300-13A, Change 2, *Airport Design*

Recently, three of the Airport’s more active general aviation tenants were surveyed to get a better understanding of their current operational needs and equipment used. All three tenants use equipment capable of operating on Runway 4-22 and expressed the importance of maintaining the runway in at least its current condition for their specific operations. All interviewed users also indicated that Runway 22 is primarily selected for departures and Runway 4 is used primarily for arrivals.

- The **Minnesota Department of Natural Resources (MnDNR)** routinely provides vital air support for fighting wildfires in northern Minnesota. In 2018 and 2019, the MnDNR averaged 90 fixed-wing aircraft operations at HIB annually from the following aircraft shown in **Table 2**.

Table 2 MnDNR Aircraft Fleet

Aircraft	Category
Air Tractor Fire boss (AT-802F)	A-I
Quest Kodiak (KODI)	A-I
Cessna 310 (C310)	A-I

Source: MnDNR records, 2021

Because the MnDNR provides emergency firefighting response services, Runway 4-22 is preferred exclusively (100% of the time) when weather conditions permit its use. Due to the location of the DNR facility near the Runway 22 threshold, and because reducing response time can have significant impacts when saving lives

and property, using Runway 4-22 offers the shortest available taxiing distance. This also helps save fuel, and time needed to refuel, which facilitates the ability to respond to fire emergencies quicker and more frequently.

- **Premium Plant Services/Premium Air Charters** provides charter services at Range Regional Airport. The business operates a Cirrus SR22 (A-I) and Beechcraft King Air 350 (B-II) based from HIB. The tenant anticipates a total of 800 operations annually, or 400 departures and 400 arrivals, averaging around 15 to 16 flights per week. Additionally, Premium Air Charters has started a flight school. As of September 2021, the business began its first cohort with a class of four registered students. They have also received a high level of interest by other potential future students. Without including touch-and-goes, this new service is anticipated to account for four operations by a King Air 350 (B-II) per week, or around 210 operations annually. As Premium Air begins its flight school, it anticipates using Runway 4-22 for about 80% of its operations (168 operations), compared to 20% for Runway 13-31 (42 operations).
- Another HIB tenant, **L&M Radiator**, has a based Beechcraft King Air 350 (B-II) based at HIB which it operates on average 240 times annually, or 120 departures and arrivals. This averages to approximately four to five flights per week. L&M Radiator uses Runway 4-22 time for landings only for 10 percent of operations, equating to 24 B-II operations on Runway 4-22 annually.

Table 3 shows the survey results of the three tenants and the average number of operations they perform, or anticipate performing, on each runway annually. Of the total 1,130 operations performed by the three tenants, 754 will take place on Runway 4-22, with 192 of those being B-II aircraft.

Table 3 Tenant Operations

Runway/Aircraft	MnDNR	Premium Air	L&M Radiator	Total
Runway 13-31	0%	20%	90%	
	0	160	216	376
A-I	0	118	0	118
B-II	0	42	216	258
Runway 4-22	100%	80%	10%	
	90	640	24	754
A-I	90	472	0	562
B-II	0	168	24	192
Total Operations	90	800	240	1,130

Source: Tenant surveys, 2021

3 CONCLUSIONS AND RECOMMENDATIONS

While, under FAA guidance, Runway 4-22 is not required for crosswind purposes at HIB and therefore is not eligible for federal funding for necessary maintenance or improvements, the runway still receives a high number of regular users annually and is in good condition to support safe operations. The location of the runway relative to many of the Airport's general aviation facilities also makes Runway 4-22 advantageous to use by providing a shorter taxiing distance from existing facilities thus saving fuel burn. Additionally, use of Runway 4-22 improves operational safety at HIB by reducing the number of events where general aviation and commercial aircraft are forced to pass by one another when moving to/from the Runway 13 threshold, which makes it a valuable asset to plan for into the future.

Given the number of annual operations expressed by the Airport's tenants, consideration to forecast growth in operations, and the existing B-II standard design of Runway 4-22, it is the Airport's preference and RS&H's recommendation that it remain a B-II runway (with the King Air 350 as the critical aircraft) now and into the future to accommodate the growing B-II operational fleet. Doing so maintains the already designated space and presently constructed conditions necessary to meet design standards for the B-II fleet and provides additional flexibility for larger general aviation aircraft into the future.